Astro-Energy TM-L2000M

Astro-Energy 2000W Micro-Inverter User Manual

Model: TM-L2000M
Brand: Astro-Energy

1. Introduction

This manual provides essential information for the safe and efficient operation of your Astro-Energy 2000W Micro-Inverter. Please read this manual thoroughly before installation and use, and keep it for future reference. The Astro-Energy 2000W Micro-Inverter is designed to convert DC power from solar panels into AC power for household use, contributing to energy cost reduction and environmental protection.

2. Safety Information

Important Safety Instructions:

- Read all instructions and cautionary markings on the micro-inverter and in this manual before installation or use.
- Installation must be performed by qualified personnel in accordance with local electrical codes and regulations.
- Do not attempt to repair the micro-inverter yourself. Refer all servicing to qualified service personnel.
- Ensure the micro-inverter is disconnected from all power sources before performing any maintenance or installation.
- Do not immerse the micro-inverter in water or other liquids.
- Keep children away from the micro-inverter during operation.

Electrical Safety:

- Always use appropriate personal protective equipment (PPE) when working with electrical systems.
- Verify correct polarity when connecting DC cables from solar panels to the inverter.
- Ensure proper grounding of the micro-inverter.
- Do not connect the micro-inverter to a grid that is not properly configured or stable.

3. Product Overview

The Astro-Energy 2000W Micro-Inverter is designed for efficient energy conversion from solar panels. It features a compact design suitable for balconies or rooftops and offers reliable performance with adjustable power output.

Key Features:

- Adjustable power output from 100W to 2200W.
- Efficient energy conversion for up to 4 solar modules (400-650W each).
- Compact and durable design with IP67 water and dust protection.
- Integrated WiFi and Bluetooth for monitoring.

Components:

The package includes the Astro-Energy 2000W Micro-Inverter and 4 x 1M MC4 DC cables.

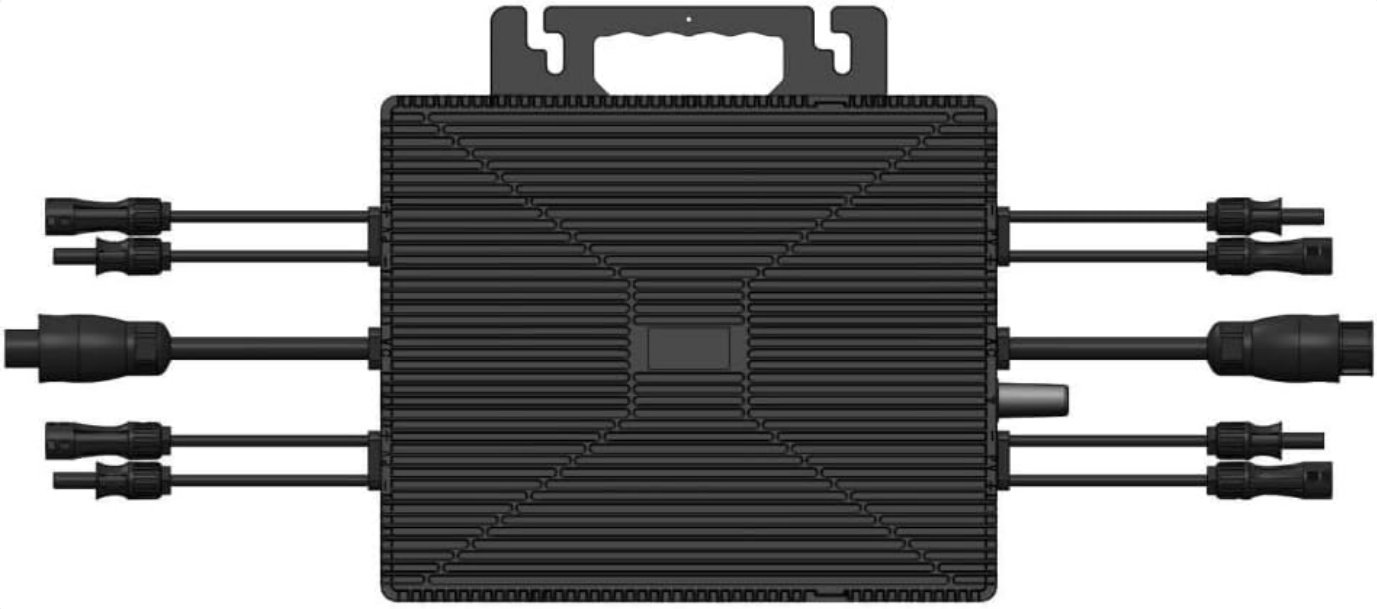


Figure 3.1: Top view of the Astro-Energy 2000W Micro-Inverter, showing its compact design and multiple input/output ports for solar panel connections.



BUREAU VERITAS

Einheitenzertifikat

Hersteller / Antragsteller: **Astro-Energy Technology Co., Ltd.**
Room 3-40, Caihong North Road No.58, Yinzhou District, Ningbo City, Zhejiang
P.R. China

Typ Erzeugungseinheit:	**Photovoltaikwechselrichter**			
Name der EZE:	**TM-L1600M**	**TM-L1800M**	**TM-L2000M**	--
Wirkleistung (Nennleistung bei Nennbedingungen) [W]:	**1600**	**1800**	**2000**	--
Bemessungsspannung:	**230V; N; PE**			

Firmwareversion: **TM2000DE1.0**

Netzanschlussregel: **VDE-AR-N 4105:2018-11 – Erzeugungsanlagen am Niederspannungsnetz**
Technische Mindestanforderungen für Anschluss und Parallelbetrieb von Erzeugungsanlagen am Niederspannungsnetz

Mitgeltende Normen / Richtlinien: **DIN VDE V 0124-100 (VDE V 0124-100):2020-06 – Netzintegration von Erzeugungsanlagen – Niederspannung**
Prüfanforderungen an Erzeugungseinheiten vorgesehen zum Anschluss und Parallelbetrieb am Niederspannungsnetz

Die oben bezeichneten Eigenerzeugungseinheiten wurden nach der Prüfrichtlinie VDE 0124-100 geprüft und zertifiziert. Die in der Netzanschlussregel geforderten elektrischen Eigenschaften werden erfüllt:

- Nachweis zulässiger Netzrückwirkungen
- Nachweis des Symmetrieverhaltens von Drehstromumrichtereinheiten
- Nachweis des Verhaltens der Erzeugungseinheit am Netz
- Nachweis der dynamischen Netzstützung

Das Zertifikat beinhaltet folgende Angaben:

- Technische Daten der Erzeugungseinheiten, der eingesetzten Hilfseinrichtungen und der verwendeten Softwareversion
- Zusammengefasste Angaben zu den Eigenschaften der Erzeugungseinheit (Wirkungsweise)

Berichtsnummer: **PVDE2406WDG0053-1** **Zertifizierungsprogramm:** **NSOP-0032-DEU-ZE-V10**
Zertifikatsnummer: **U24-0897** **Ausstellungsdatum:** **2024-09-17**

Zertifizierungsstelle

DAkkS Deutsche Akkreditierungsstelle D-ZE-12024-01-00

Dominik Kol
Head of Energy Systems

Zertifizierungsstelle der Bureau Veritas Consumer Products Services Germany GmbH akkreditiert nach DIN EN ISO/IEC 17065
Prüflabor akkreditiert nach DIN EN ISO/IEC 17025

Eine auszugsweise Darstellung des Zertifikats bedarf der schriftlichen Genehmigung der Bureau Veritas Consumer Products Services Germany GmbH

Figure 3.2: Included MC4 DC cables, essential for connecting solar panels to the micro-inverter.

4. Setup and Installation

The micro-inverter is designed for easy installation. Follow these steps carefully:

4.1 Mounting the Micro-Inverter:

1. Choose a suitable location for mounting the micro-inverter, ensuring it is protected from direct sunlight and has adequate ventilation.
2. Securely mount the inverter using appropriate hardware.

4.2 Electrical Connections:

1. Connect the DC cables from your solar panels to the corresponding input ports on the micro-inverter. Ensure correct polarity (positive to positive, negative to negative).
2. Connect the AC output cable of the micro-inverter to your household electrical grid. This connection must be done by a certified electrician.
3. Ensure all connections are tight and secure.

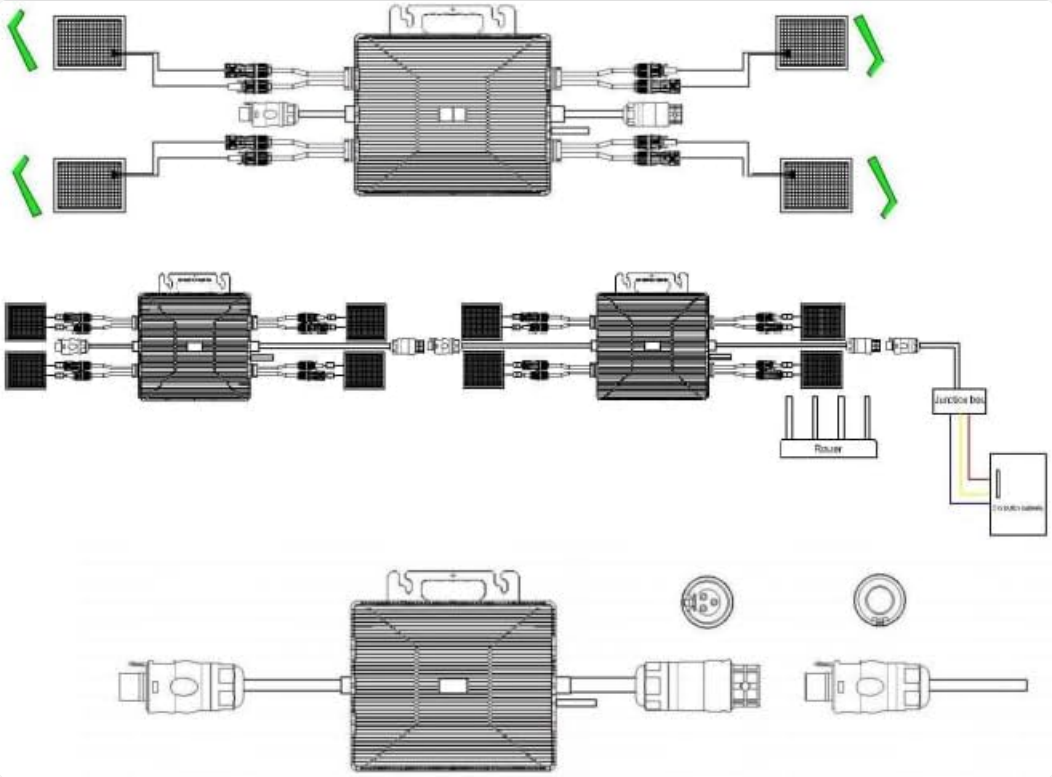
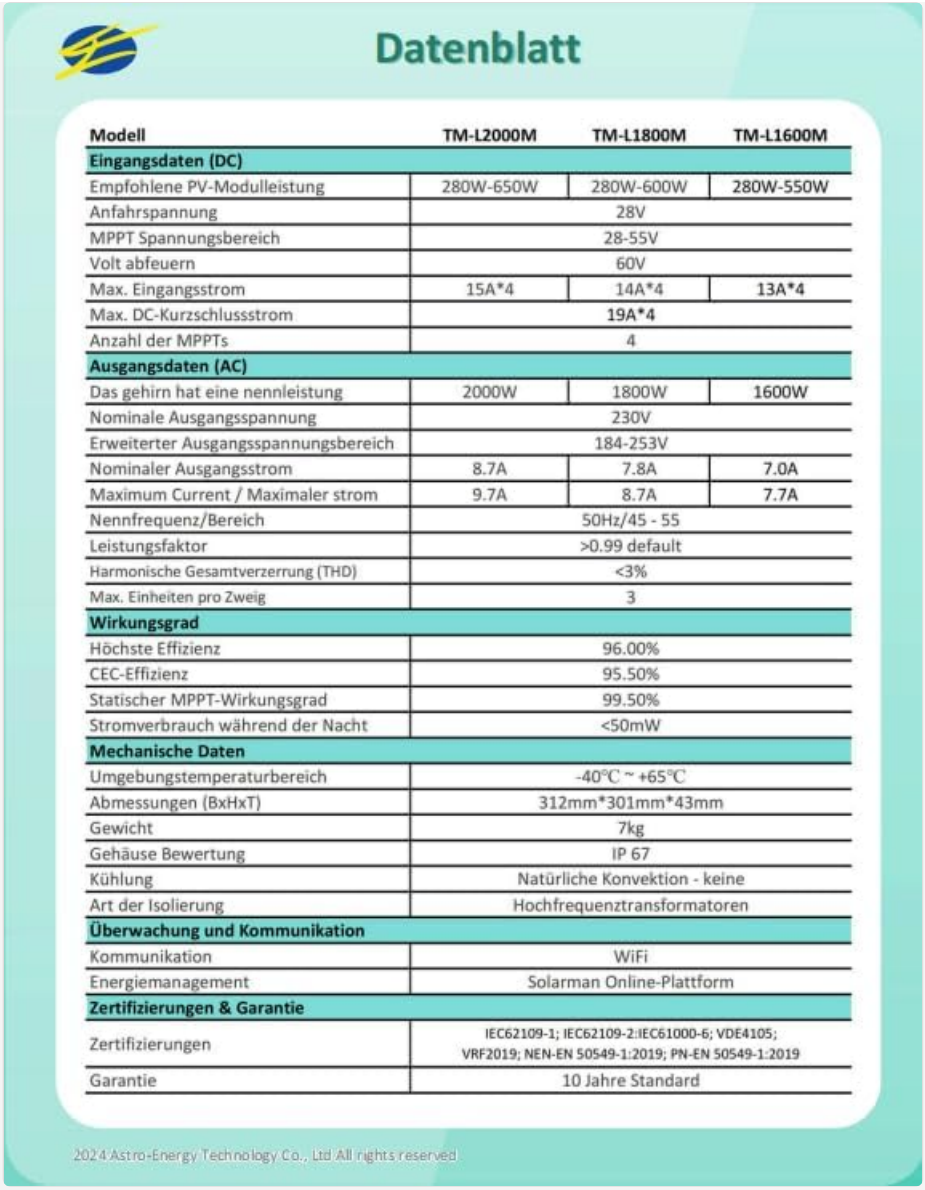


Figure 4.1: Basic connection diagram illustrating how solar panels connect to the micro-inverter.



Figure 4.2: Detailed wiring diagram showing connections for multiple micro-inverters in a larger solar setup, including grid connection points.



Datenblatt

Modell	TM-L2000M	TM-L1800M	TM-L1600M
Eingangsdaten (DC)			
Empfohlene PV-Modulleistung	280W-650W	280W-600W	280W-550W
Anfahrspannung	28V		
MPPT Spannungsbereich	28-55V		
Volt abfeuern	60V		
Max. Eingangsstrom	15A*4	14A*4	13A*4
Max. DC-Kurzschlussstrom	19A*4		
Anzahl der MPPTs	4		
Ausgangsdaten (AC)			
Das gehirn hat eine nennleistung	2000W	1800W	1600W
Nominale Ausgangsspannung	230V		
Erweiterter Ausgangsspannungsbereich	184-253V		
Nominaler Ausgangsstrom	8.7A	7.8A	7.0A
Maximum Current / Maximaler strom	9.7A	8.7A	7.7A
Nennfrequenz/Bereich	50Hz/45 - 55		
Leistungsfaktor	>0.99 default		
Harmonische Gesamtverzerrung (THD)	<3%		
Max. Einheiten pro Zweig	3		
Wirkungsgrad			
Höchste Effizienz	96.00%		
CEC-Effizienz	95.50%		
Statischer MPPT-Wirkungsgrad	99.50%		
Stromverbrauch während der Nacht	<50mW		
Mechanische Daten			
Umgebungstemperaturbereich	-40℃ ~ +65℃		
Abmessungen (BxHxT)	312mm*301mm*43mm		
Gewicht	7kg		
Gehäuse Bewertung	IP 67		
Kühlung	Natürliche Konvektion - keine		
Art der Isolierung	Hochfrequenztransformatoren		
Überwachung und Kommunikation			
Kommunikation	WiFi		
Energiemanagement	Solarman Online-Plattform		
Zertifizierungen & Garantie			
Zertifizierungen	IEC62109-1; IEC62109-2:IEC61000-6; VDE4105; VRF2019; NEN-EN 50549-1:2019; PN-EN 50549-1:2019		
Garantie	10 Jahre Standard		

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Figure 4.3: Example of a complete balcony power plant setup, demonstrating the integration of solar panels and the micro-inverter with a residential building.

5. Operating Instructions

Once installed and connected, the Astro-Energy 2000W Micro-Inverter will automatically begin converting DC power from your solar panels into AC power for your home. The inverter features an adjustable power output from 100W to 2000W, allowing you to optimize energy generation based on your needs and local regulations.

Monitoring:

The micro-inverter includes WiFi and Bluetooth connectivity, allowing for remote monitoring of its performance. Refer to the separate application guide for instructions on connecting to the monitoring platform (Solarman Online Platform).

6. Maintenance

The Astro-Energy 2000W Micro-Inverter is designed for low maintenance. However, regular checks can ensure optimal performance and longevity.

- **Cleaning:** Periodically clean the exterior of the inverter to remove dust and debris. Use a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Connections:** Annually inspect all electrical connections for tightness and signs of corrosion. Ensure all cables are intact and not damaged.
- **Ventilation:** Ensure that the ventilation openings are not blocked to prevent overheating.
- **Environmental Conditions:** Verify that the inverter is operating within its specified temperature range.

If any issues are observed, refer to the troubleshooting section or contact customer support.

7. Troubleshooting

This section provides solutions to common issues you might encounter with your micro-inverter.

Problem	Possible Cause	Solution
No power output	No DC input from solar panels; AC grid disconnected; Inverter fault	Check solar panel connections; Verify grid connection; Contact support if fault persists
Low power output	Insufficient sunlight; Dirty solar panels; Partial shading	Ensure panels are clean and unshaded; Check weather conditions
Inverter overheating	Poor ventilation; High ambient temperature	Ensure clear airflow around inverter; Relocate if necessary to a cooler spot
Monitoring app not connecting	WiFi signal weak; Incorrect network settings	Check WiFi signal strength; Reconfigure network settings in the app

If the problem persists after attempting these solutions, please contact Astro-Energy customer support.

8. Specifications

Below are the technical specifications for the Astro-Energy 2000W Micro-Inverter (Model TM-L2000M):



Figure 8.1: Official Datasheet for Astro-Energy Micro-Inverters, providing detailed electrical and mechanical specifications.

Attribute	Value
Model Number	TM-L2000M
Product Dimensions	52 x 47 x 5 cm
Weight	5 Kilograms
Manufacturer	Astro-Energy
Recommended Applications	Home
Power Source	Solar Powered
Wattage	2000W (Adjustable 100-2200W)
Ingress Protection (IP) Rating	IP67 (Water and Dust Protection)
Communication	WiFi, Bluetooth
Certifications	TÜV, VDE, IEC62109-1, IEC62109-2, IEC61000-6, VDE4105, VRF2019, NEN-EN 50549-1:2019, PN-EN 50549-1:2019

9. Warranty and Support

The Astro-Energy 2000W Micro-Inverter comes with a **10-year warranty**, ensuring long-term reliability and peace of

mind. This warranty covers defects in materials and workmanship under normal use and service conditions.

Certifications:

The product is certified by reputable organizations, ensuring its quality and compliance with international standards.



Seite *Page* 1 / 2

Zertifikat *Certificate*

Zertifikatsnummer *Certificate No.:*
R 50634444 0001

Berichtsnummer *Report No.:*
CN23OV0M 001

Genehmigungsinhaber *License Holder:*
Astro-Energy Technology Co., Ltd.
Room 3-40, Caihong North Road No. 58,
Yinzhou District, Ningbo City,
315100 Zhejiang
P.R. China

Fertigungsstätte *Manufacturing Site:*
Astro-Energy Technology Co., Ltd
2F, Building 9, No.688
Jinda Road, Panhuo Street, Yinzhou District
Ningbo City
315040 Zhejiang
P.R. China

Prüfzeichen *Test Mark:*
TÜVRheinland CERTIFIED
Type Approved
Safety
Regular Production Surveillance
www.tuv.com
ID 111128557

Geprüft nach *Tested according to:*
EN 62109-1:2010
EN 62109-2:2011
IEC 62109-1:2010
IEC 62109-2:2011

Geräteidentifikation
Product Identification

Produkt: *Product:* PV-Inverter (Microinverter)

Modell: *Type:* Modelle sind auf nächste(r) Seite(n) gelistet / *Type designation(s) are listed on the next page(s)*

Technische Daten: *Technical Data:* Refer to the next page(s) ANLAGE (Appendix): 1.0

Gültig ab: *Valid from:* 2024-06-11

Ausstellungsdatum: *Date of issue:* 2024-06-11

Zertifizierungsstelle: *Certification body:*
Bo Liu

TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg
http://www.tuv.com/safety E-mail: markcheck@tuv.com
Fax: +49 221 806-3935

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Figure 9.1: TÜV Rheinland Certificate confirming the product's compliance with relevant safety and quality standards.



Figure 9.2: Bureau Veritas Unit Certificate, detailing the compliance and specifications of the photovoltaic inverter.

Customer Support:

For technical assistance, warranty claims, or any other inquiries, please contact Astro-Energy customer support through the official channels provided at the time of purchase or on the manufacturer's website.

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Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question